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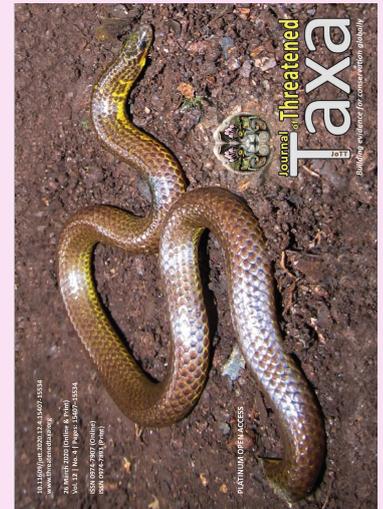
NOTE

DESCRIPTION OF A NEW SUBSPECIES OF THE GENUS *MICROCEROTERMES* SILVESTRI, 1901 (AMITERMITINAE: TERMITIDAE: ISOPTERA) AND THE FIRST RECORD OF ANOTHER TERMITE SPECIES FROM MEGHALAYA, INDIA

Khirod Sankar Das & Sudipta Choudhury

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Description of a new subspecies of the genus *Microcerotermes* Silvestri, 1901 (Amitermitinae: Termitidae: Isoptera) and the first record of another termite species from Meghalaya, India

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Abbreviations: HL—Head length; HLM—Head length with mandible; HW—Head width; LL—Labrum length; LW—Labrum width; ML—Mandible length; PL—Pronotum length; PW—Pronotum width; PoL—Postmentum length; PoW—Postmentum width; PoWW—Postmentum width at waist; Post L—Postclypeus length; Post W—Postclypeus width; TBL—Total body length.

Microcerotermes is a cosmopolitan genus occurring in all the zoogeographical regions except Nearctic region with around 148 living species (Chhotani 1997; Krishna et al. 2013). In the Oriental region, this genus is widely distributed in almost all the countries of the region and equally well distributed in the Ethiopian region too (Chhotani 1997). According to Chhotani (1997), the oriental region comprises 42 species under the genus *Microcerotermes* with 29 species from the Indian region. The northeastern part of India, which harbors 76 species of termites, comprises four species of the genus *Microcerotermes* out of which one is endemic to the region (Bose 1999). But, from Meghalaya, one of the states of northeastern India, there was no earlier report of the genus. On the other hand, the genus

Reticulitermes is palaeartic in distribution which is extended in the colder parts of Indian region with around 60 species in total. The Indian region comprises of five species with two species reported from the state of Meghalaya (Bose 1999).

In our recent study on the termite fauna of Meghalaya, we identified the genus *Microcerotermes* for the first time with the description of a new subspecies due to its characteristic differences from the nominate species. The subterranean termite species *Reticulitermes chinensis* is also a new record from the state and the morphometrics of which is also revised here.

The specimens studied were collected from different parts of Meghalaya and were preserved in 80% alcohol. Measurements of the specimens were done using Leica stereo zoom microscope S8AP0 and the identification was done based on available literature and taxonomic keys (Roonwal & Chhotani 1989; Chhotani 1997). All the samples studied are deposited in the national repository of the Zoological Survey of India, North Eastern Regional Centre, Shillong, Meghalaya.

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Family: Termitidae

Subfamily: Amitermitinae

***Microcerotermes labioangulatus wahkdaitensis*
ssp. nov.**

(Image 1 A–E)

urn:lsid:zoobank.org:act:F63C9179-D913-4F96-9F81-A434C0027635

Type materials studied

Holotype: Voucher No. IV/ISOP/ERS/4424, one ex. soldier, 22.ii.2019, Wahkdait area, East Khasi Hills, Meghalaya, India, 25.208°N & 91.990°E, 388m, coll. Khirod Sankar Das & party.

Paratype: Voucher No. IV/ISOP/ERS/4425, one ex. soldier and 24 exs. workers, same information as in Holotype.

Other materials studied: Voucher No. IV/ISOP/ERS/4426, 11 exs. soldiers and three exs. workers, 24.iv.2019, Wahkdait area, East Khasi Hills, Meghalaya, India, 25.208°N & 91.989°E, 388m, coll. Khirod Sankar Das & party.

Description

Soldier (Image 1, A–C): Head-capsule yellowish-brown to deep brown; antennae yellowish-brown; mandibles dark reddish-brown; body straw in color. Head sparsely and body moderately hairy. Head-capsule long, rectangular, sides almost parallel. Antennae with 13 segments; segment 3 shortest, 4 longer than 5 or sub equal to 5. Labrum pentagonal; antero-lateral corners angulated and anterior margin somewhat pointed at middle; broader than long. Mandibles strongly curved like a scathye and apically pointed and incurved; mandible length less than the half of the head-length; inner margin coarsely serrated in basal half. Postmentum club-shaped, a little narrowed at waist behind middle. Pronotum saddle-shaped.

Worker (Image 1, D–E): Head-capsule and antennae yellowish; body paler than head. Head moderately and body densely hairy. Head-capsule subsquarish. Fontanelle indistinct. Antennae 13 segmented; segment 3 shortest, 5 longer than 4 or sub equal to 4. Postclypeus swollen, hairy; length a little more than half of width. Pronotum saddle-shaped; anterior margin with a distinct notch, posterior margin weakly emarginated.

Diagnosis: The morphometrics (Table 1) of this new subspecies is very close to that of the species *Microcerotermes labioangulatus* but shows striking differences in the taxonomic characters with high importance (Chhotani 1997). In this subspecies, the length of the mandible is less than the half of the head length (without mandible) whereas in case of *M.*

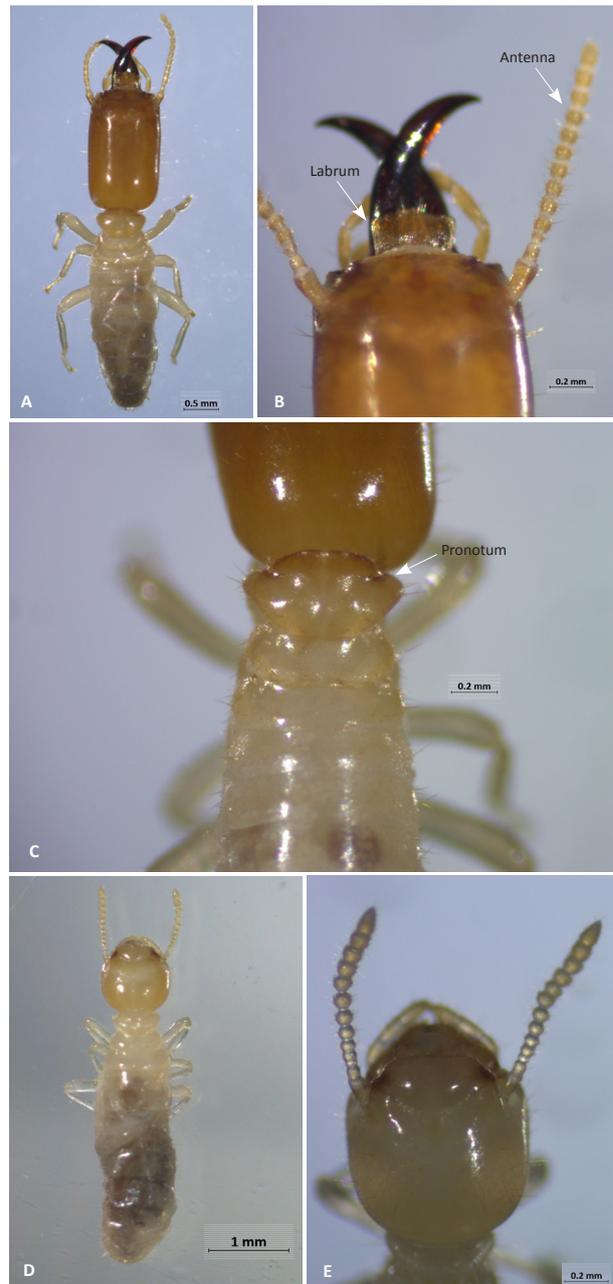


Image 1. Soldier and worker of *Microcerotermes labioangulatus wahkdaitensis* ssp. nov.: A—soldier | B—head of soldier showing antenna and labrum | C—pronotum of soldier | D—worker | E—head of worker showing the antennal segments. © Authors.

labioangulatus the length of mandibles is more than the half of the head length. The mandible length and the head length (without mandible) index is also less than that of the *M. labioangulatus*. On the other hand, the antennal segments of soldiers have shown slight differences as segment two is slightly longer than segment four and segment four is subequal to or slightly longer than segment five whereas in *M. labioangulatus*, segment

Table 1. Morphometrics (in mm) of soldiers (n=13) and workers (n=27) of *Microcerotermes labioangulatus wahkdaitensis* ssp. nov.

Characters	Soldiers		Workers
	Holotype	Size ranges	Size ranges
TBL	5.6	5.00–5.65	3.80–5.10
HLM	2.55	2.45–2.75	–
HL	1.75	1.75–1.85	0.85–1.05
HW	1.00	1.00–1.10	0.88–1.13
HW/HL	0.57	0.57–0.60	–
ML	0.80	0.75–0.95	–
ML/HL	0.48	0.40–0.54	–
PL	0.43	0.40–0.45	0.25–0.38
PW	0.73	0.73	0.50–0.68
PoL	1.00	1.00–1.10	–
PoW	0.33	0.30–0.35	–
PoWW	0.18	0.18	–
LL	0.25	0.18–0.25	–
LW	0.43	0.35–0.43	–
Post L	–	–	0.28–0.33
Post W	–	–	0.43–0.55

four is longer than segment five. In case of workers too, segment five is longer than or subequal to four whereas in *M. labioangulatus*, segment four is longer than five. The total body length of the smaller workers also found to be less than the lower range of *M. labioangulatus*. Further, this subspecies also showed some similarities in the structure of labrum and head with the soldiers of *M. pakistanicus* which is also reported from India. But, can be separated clearly based on the differences of head length, mandible length, mandible and head length index, postmentum length, pronotum length and width of soldiers and the total body length, pronotum length and width of the workers of both the species (Chhotani 1997).

Etymology: This subspecies is named after its type locality which is Wahkdait area near Pynursla, East Khasi Hills, Meghalaya.

Distribution: Wahkdait, East Khasi Hills, Meghalaya, India.

Family: Rhinotermitidae

Subfamily: Heterotermitinae

***Reticulitermes chinensis* Snyder, 1923**

Materials examined- Voucher No. IV/ISOP/ERS/4427, 23 exs. soldiers and 20 exs. workers, 25.vii.2019, NEHU Campus, Shillong, Meghalaya, India, 25.613°N & 91.900°E, 1,413m, coll. Khirod Sankar Das.

Description

Soldier (Image 2, A–B): TBL 5.90-7.10 mm; head-capsule sub rectangular, longer than wide, length



Image 2. Soldier and workers (major) of *Reticulitermes chinensis* Snyder, 1923: A—soldier | B—head of soldier showing labrum | C—worker with 16 antennal segments | D—worker with 17 antennal segments | E—worker with 18 antennal segments. © Authors.

Table 2. Revised morphometrics (in mm) of *Reticulitermes chinensis* Snyder, 1923.

<i>Reticulitermes chinensis</i> Snyder, 1923			
Characters	Soldiers (n=23)	Workers minor	Workers major (n=20)
TBL	5.90–6.70	3.50–4.00	4.80–5.15
HLM	2.85–3.15	–	–
HL	1.90–2.15	1.05–1.07	1.00–1.30
HW	1.10–1.20	1.17–1.22	1.07–1.45
HW/ HL	0.52–0.60	–	–
ML	0.95–1.05	–	–
ML/ HL	0.47–0.51	–	–
PL	0.55–0.60	0.42–0.50	0.42–0.45
PW	0.90–0.95	0.77–0.85	0.77–0.85
PoL	1.45–1.60	–	–
PoW	0.45–0.50	–	–
PoWW	0.18	–	–
Antennal segments	16 or 17 or 18 segmented. In 16 and 17, 3 rd or 4 th is shortest. In 18 segmented, 4 th is shortest.	15 segmented. 4 th segment is shortest.	16 or 17 or 18 segmented. In 16 and 18 Segmented, 4 th is shortest. In 17 segmented, 3 rd segment is shortest.

1.83–2.27; HW 1.08–1.32 mm. Antennae with 16, 17 or 18 segmented; segment 3 shortest in 16 and 17 segmented one and segment 4 shortest in 18 segmented one. Labrum oval, longer than broad, usually broadest near the base; sides convex with hyaline margin and converging into thin and sharply pointed tip having two long bristles. ML 0.95–1.22 mm; left mandible with 3–4 crenulations and a basal projection. PoL 1.30–1.50; PoW 0.43–0.52; PoWW 0.12–0.15 mm. Pronotum flat, narrower than head; length 0.50–0.55, width 0.82–0.95.

Workers: Dimorphic: Worker minor: TBL 3.50–4.00 mm, HL 1.05–1.07, HW 1.17–1.22 mm. Antennae 15 segmented, segment 2 longer than 3, 4 shortest. Mandibles typically *Reticulitermes*-type. Pronotum flat, length 0.42–0.50 mm, width 0.77–0.85 mm (Adapted from Roonwal & Chhotani 1989).

Worker major (Image 2, C–E): TBL 4.80–5.15 mm, HL 1.00–1.30, HW 1.07–1.45 mm. Antennae 16–18 segmented, segment 4 is shortest in 16 and 18 segmented one and segment 3 is shortest in 17 segmented one. Pronotum flat, length 0.42–0.50 mm and width 0.77–0.85 mm.

Redescription: The morphometrics of *R. chinensis* from the study area show variation in comparison to the descriptions in available literature (Roonwal & Chhotani 1989). Variation among the individuals of *R. chinensis* may be because of their inclined nature toward variation or because of the climatic condition of the study area which is usually colder (Average maximum temperature 12°C in Winter and 25°C in Summer). The HLM, HW/HL, and ML/HL index of the soldier castes are provided here based on this study. Here, the upper ranges of the PL, PoL, and PoWW have been found slightly more than the ranges reported earlier. In case of the workers, the TBL, HL, HW were found to be greatly varied than the range in available literature. The antennae of the worker individuals also vary significantly which were found to be 16, 17 or 18 segmented. In case of 16 and 18 segmented one, segment 4 is shortest and in 17 segmented one, segment 3 is shortest. We did not get workers with 15 segmented antenna from the study area. Based on the morphometrics of *R. chinensis* from the samples studied by us and the descriptions by Roonwal & Chhotani (1989), we designate the workers as worker major and worker minor and revise the morphometrics for the species through this communication (Table 2).

Distribution: China and India (Arunachal Pradesh, Assam, and Meghalaya).

The description of the new subspecies of the genus *Microcerotermes* forms the first report of the genus from Meghalaya, India, which revealed the probability of more new discoveries of termite species from the state. Furthermore, the revised morphometrics of *Reticulitermes chinensis* will definitely help future workers in correct identification of the species from the study area.

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